

37. A signal transmission apparatus according to claim 36, wherein n is an integer and equal to or greater than m.

38. A signal receiving apparatus comprising:

- a receiver operable to receive a transmitted signal to produce a received signal;

wherein the transmitted signal has information of a first data stream and a second data stream, the first data stream is an m-level PSK modulated signal or an m-level QAM modulated signal, the second data stream is an n-level PSK modulated signal or an n-level QAM modulated signal, and the first data stream includes information for demodulation representing the value of n of the second data stream; and

- a demodulator operable to demodulate the received signal to produce the first data stream and the second data stream, wherein

the second data stream is produced according to the information for demodulation representing the value of n.

39. A signal receiving apparatus according to claim 38, wherein n is an inter and equal to or greater than m.

40. A signal transmission system comprising:

a signal transmission apparatus comprising:

- a modulator operable to modulate a first data stream according to an m-level PSK modulation or an m-level QAM modulation, and modulate a second data stream according to an n-level PSK modulation or an n-level QAM modulation to produce modulated signals; and

- a transmitter operable to transmit the modulated signals; and

a signal receiving apparatus comprising:

- a receiver operable to receive the modulated signals; and

- a demodulator operable to demodulate the modulated signals to produce the first data stream and the second data stream,

wherein the first data stream includes information for demodulation representing the value of n of the second data stream, and

the second data stream is produced according to the information for demodulation representing the value of n.

41. A signal transmission system according to claim 40, wherein n is an integer and equal to or greater than m.

42. A signal transmission method for transmitting a first data stream and second data stream, comprising:

- modulating the first data stream according to an m-level PSK modulation or an m-level QAM modulation, and modulating the second data stream according to an n-level PSK modulation or an n-level QAM modulation to produce modulated signals, and

-transmitting the modulated signals,

wherein the first data stream includes information for demodulation representing the value of n of the second data stream.

43. A signal transmission method according to claim 42, wherein n is an integer and equal to or greater than m.

44. A signal receiving method comprising:

- receiving a transmitted signal to produce a received signal;

wherein the transmitted signal has information of a first data stream and a second data stream, the first data stream is an m-level PSK modulated signal or an m-level QAM modulated signal, the second data stream is an n-level PSK modulated signal or an n-level QAM modulated signal, and the first data stream includes information for demodulation representing the value of n of the second data stream,

- demodulating the received signal to produce a first data stream and a second data stream,
wherein

the second data stream is produced according to the information for demodulation
representing the value of n.

45. A signal receiving method according to claim 44, wherein n is an integer and equal to or
greater than m.

46. A signal transmitting and receiving method comprising:

- modulating a first data stream according to an m-level PSK modulation or an m-level QAM
modulation, and modulate a second data stream according to an n-level PSK modulation or an n-
level QAM modulation to produce modulated signals;

- transmitting the modulated signals;

- receiving the modulated signals; and

- demodulating the modulated signals to produce the first data stream and the second data
stream,

wherein the first data stream includes information for demodulation representing the value
of n of the second data stream, and

the second data stream is produced according to the information for demodulation
representing the value of n.

47. A signal transmitting and receiving method according to claim 46, wherein n is an integer
and equal to or greater than m.